DOCUMENT RESUME

ED 403 409 CE 073 244

AUTHOR Bean, Thomas L.; Isaacs, Linda K.
TITLE The Invisible Worker: Highlights of the Ohio Migrant Farm Worker Safety Needs Assessment. Working Paper Series WP-024.
INSTITUTION Ohio State Univ., Columbus. Center for Labor Research.
PUB DATE Sep 96
NOTE 23p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Agricultural Occupations; *Educational Needs; Employee Attitudes; Employer Attitudes; *Migrant Workers; Needs Assessment; *Occupational Safety and Health; Program Effectiveness; *Safety Education; State Surveys; *Statewide Planning
IDENTIFIERS *Ohio

ABSTRACT

The Ohio Migrant Farm Worker Safety Needs Assessment was conducted to obtain baseline data on why migrant farm workers are at high risk of injury and illness in Ohio. First, 106 migrant farm workers were interviewed at clinics, labor camps, and job sites. Information concerning demographics, safety training, and incidence of occupational injury and illness was gathered in English and Spanish. Next, a questionnaire was sent to 110 employers in 4 agricultural sectors (vegetable, fruit, packing, and nursery). Eighty-four (76%) of the employers responded to the questionnaire, which included questions about operation demographics, implementation of safety preventive measures, incidence occupational injury/illness among workers, and employer attitudes regarding specific safety-related activities. It was discovered that Ohio's migrant farm workers (more than 99% of whom are Hispanic and 50% of whom reported working in the fields/groves when children) are not receiving adequate, standardized safety and health training. The little safety training that was being provided by employers was often informal and delivered through ineffective training methods. A critical need for programmatic and educational support for the growers, managers, and crew chiefs who develop and conduct training was identified. (Contains 12 tables/figures and 12 references.) (MN)

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THE INVISIBLE WORKER: HIGHLIGHTS OF THE OHIO MIGRANT FARM WORKER SAFETY NEEDS ASSESSMENT

Thomas L. Bean
and Linda K. Isaacs
Department of Agricultural Engineering
The Ohio State University

WP–024
September, 1996

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The Invisible Worker: Highlights of The Ohio Migrant Farm Worker Safety Needs Assessment

By

Linda K. Isaacs
Extension Associate

Dr. Thomas L. Bean
Safety Leader

Abstract

A two-phase safety needs assessment was conducted to provide baseline data on why migrant farm workers are at a high risk of injury and illness in Ohio. In Phase 1, researchers interviewed 106 migrant farm workers at clinics, labor camps and job sites. Information concerning demographics, safety training and incidence of occupational injury and illness was solicited in both English and Spanish. In Phase 2, a mailed questionnaire was administered to employers in four different agricultural sectors, collecting information concerning: operation demographics; implementation of safety preventative measures; incidence of occupational injury and illness among workers; and employer attitudes concerning specific safety -related activities. Findings indicate that the predominately Hispanic migrant farm workers surveyed are not receiving standardized, adequate safety and health training.

Introduction

Agriculture is one of the three most hazardous industries in the United States today. Although agricultural workers account for less than 3 percent of the work force, they suffer nearly 14 percent of work-related deaths (National Safety Council, 1993). The migrant work force is highly vulnerable in that there may be little or no training in safety, and English language skills may be at low level (McCurdy, 1994). Poor education, language barriers, and the transient nature of the work probably also increase risk. In 1985, The Office of Migrant Health estimated that there are between 1.0-2.7 million migrant and seasonal farm workers (Rust, 1990). Slesinger and Ofstead (1993) make the distinction between migrant and seasonal farm workers, in that, while both perform the same tasks, seasonal farm workers live at home year-round while migrant farm workers move around the country in search of farm work. The difficulties in obtaining an accurate count of the migrant population has been attributed to several factors: the absence of a uniformly accepted definition of migrant and seasonal farm work; the highly mobile nature of this population; their frequent movement between Mexico and the United States; seasonal changes in location of farm work and the

farmworker population; remote locations of the camps or worksite; language barriers; and the desire of many immigrant workers to avoid contact with government agencies (Mobed, Gold & Schenker, 1992).

Some examples of the occupational injuries and illnesses farm workers experience are: fractures resulting from falls from ladders or equipment; sprains and strains from prolonged stooping, heavy lifting and carrying; amputations and lacerations from entanglement in machinery; pesticide poisoning; dermatitis from exposure to plants and pesticides; traumatic injury by tractor or vehicle accidents; eye injuries; and heatstroke, hypothermia or frostbite (Murphy, 1992). Many of the migrant safety and health problems can be traced back to hazardous working conditions, sub-standard living conditions, poor nutrition, intermittent medical assistance and lack of potable water and sanitation facilities in the field or grove. As a result, the average life expectancy of a migrant farm worker is 49 year, in comparison to the national average of 75 years (Wilk, 1986).

Migrant farm workers in Ohio provide a valuable service in the cultivation, harvesting and processing of vegetables, fruit and nursery products. In 1993, approximately 10,360 workers (ages 14 years or older) were employed as migrant farm workers. Roughly 73,000 acres of labor-intensive crops were harvested, valued at over $1.3 million (Migrant Ombudsman, 1993). Relying heavily upon migrant labor, Ohio is one of the top producers of processed tomatoes and pickle cucumbers in the United States. Working in 36 counties, migrant workers also plant, prune, and harvest apples, lettuce, flowers and other labor-intensive nursery, fruit and vegetable crops.

The first of its kind in Ohio, the Ohio Migrant Farmworker Safety Needs Assessment was conducted to examine specific safety-related characteristics of the migrant workforce, including the type and content of formal worker safety training administered by migrant employers.

Methods

This two-phase, cross-sectional study consisted of a mailed employer questionnaire and an employee interview administered during peak season in June, July and August. Four agricultural sectors were identified as major employers of migrant farm workers in Ohio: vegetable production; fruit production; fruit and vegetable packing houses; and wholesale nursery production.

As there was no formal list of migrant employers available, the location of the migrant workers and interview sites had to be first determined. A list of growers who operated licensed labor camps in 1993 was obtained from the Migrant Ombudsman at the Ohio

Bureau of Employment Services. In addition, member lists were obtained from the Ohio Vegetable and Potato Growers Association, The Ohio Fruit Growers Society, the Ohio Nursery and Landscaping Association, and the Ohio Farm Bureau. In order to verify whether these individuals were currently employing migrant farm workers, a self-disclosure postcard, with an accompanying cover letter was mailed. The letter requested that the growers check the appropriate box on the stamped return postcard, self-disclosing if they employed migrant farm workers at their operation. By tracking respondents, the researchers were able to pinpoint the geographical location of high concentrations of migrant workers.

Employee Interview

The employee interview of the Ohio Migrant Farm Worker Safety Needs Assessment solicited migrant workers' responses concerning safety awareness, training received and incidence of injury or illness. Depending upon the product and time of season, migrant workers may be involved in planting, cultivating, harvesting, processing and packaging of fruit, vegetables and nursery products.

The actual interview consisted of 41 open-ended questions emphasizing four areas: demographics; work history; safety training and safety awareness; and incidence of occupational injury and illness. Employee interviews (N=106) were conducted during peak harvest in June, July and August in 1994. Due to drastic budgetary constraints and difficulties in gaining access to migrant workers, interviews were conducted at the Fremont Migrant Rest Center, two migrant health clinics and eight employer labor camps in Northern and Central Ohio. Special care was taken to utilize a non-threatening conversational style, where the interviewer explained the purpose of each section of questions in a friendly, non-condescending manner. Putting interviewees at ease by using common Spanish jargon, the interviewer encouraged participants to ask questions, describe experiences or elaborate upon their answers.

An important goal of the needs assessment was to construct a profile of the typical Ohio migrant farm worker. Demographic information was gathered, including age, gender, homebase location, and education level. Focusing upon what hazards the individual may face every day on the job, the interviewer asked participants what type(s) of crops they worked with, what task(s) they performed and the degree of worker safety and health training received while working in Ohio (i.e., training topic, type of format and materials used, characteristics of trainer, number of times training was provided in a season and perceived quality of training by migrant farm worker). Final questions examined the incidence of occupational injury and illness reported by the migrant farm workers.

As a courtesy to those individuals who did not feel comfortable speaking with the interviewer, or preferred to write their own responses, a copy of the survey and pencils were also available. In the interview booklet, both the directions and questions were provided in English and Spanish. Surprisingly, several individuals surveyed at the migrant clinic locations preferred to write their own responses and specifically asked for an English-only version.

Each interviewer was fluent in colloquial Spanish and had experience in working with rural Hispanic populations. In order to avoid interviewer bias, a formal interviewer training module was developed and administered. In addition to the standard interviewer script, the training module addressed: critical need for brevity; participant privacy; definitions of agricultural safety terms (i.e., contact dermatitis); developmental explanation for each question; and further suggestions to improve clarity and response rate.

The content validity of the interview instrument was evaluated by a panel of safety experts and in a pilot test involving 12 migrant workers at the Migrant Rest Center in northwestern Ohio. An evaluation form was distributed to both the pilot participants and interviewers gathering feedback on: readability, level of comprehension and appropriateness of terms. Based upon these comments, the interview instrument was modified to include: both English and Spanish translation of agricultural terms; an expanded script for the interviewer to further explain the purpose of the needs assessment; and specific colloquialisms used by workers.

Employer Questionnaire

The second phase of the needs assessment involved a mailed questionnaire to employers to assess migrant safety and health issues. Following Dillman's Total Design Method (1978), the Migrant Employer Mailed Questionnaire (N=84) included first an explanatory cover letter and a formal questionnaire booklet, a follow-up reminder by postcard and, finally, a second follow-up letter with an enclosed survey booklet. The instrument consisted of four sections soliciting information concerning: operation demographics; implementation of safety preventative measures (e.g., worker safety training); incidence of occupational injury and illness; and perceived effectiveness and importance of certain safety interventions. Eighty-four of the 110 questionnaires were completed and returned, providing a 76 percent return rate. Due to monetary constraints, no efforts were made to improve upon this rate or to collect information from non-respondents for comparative purposes.

The content validity of the interview instrument was evaluated through a review by an expert panel of safety professionals and cooperative grower association representatives.

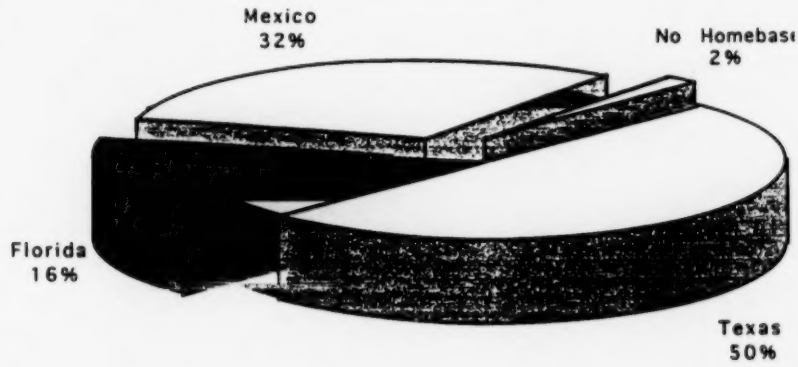
The panel was asked to evaluate for: comprehensiveness; content; readability; level of comprehension; and appropriateness of terms.

Results

Employee Interview

Sample Demographic Information. Over 99 percent of the migrant farm workers interviewed were young and Hispanic, having an average age of 32 years. Over 50 percent of the participants were under 21 years of age, reflecting the vigor and resilience required for planting, harvesting and packing crops. Of the 106 migrant farm workers interviewed, 70 percent were men. As indicated in Figure 1, 50 percent of the workers interviewed stated that their "homebase", where they returned each year at the end of the season, was located in Texas. The remainder of the participants who returned to a homebase originated either from Florida or Mexico. (A very small percentage replied that they had no permanent homebase, but instead travelled all year round from one job to the next).

Figure 1:
Location of Permanent Homebase During Off-Season
(Nw= 106 Migrant Farmworkers)



Over half of all men (59%) and half of all women (50%) reported working in the fields or groves with their parents when they were children. However, it is uncertain whether <u>all</u> respondents were referring to work on their home farms or as a family unit employed by a grower, either in the United States or Mexico. This distinction was not made during the interview.

A unique characteristic of the migrant labor force was that many travel from job to job in groups, usually as family units. In 1993, there were 150 registered agricultural labor camps in Ohio (Ohio Migrant Ombudsman, 1993). The majority of the workers in the sample reported living in employer-provided agricultural labor camps (71%), while the remainder lived in rented houses (18%), apartments (4%) or the Migrant Rest Center (6%). Of the 47 interviewees who indicated that they brought young children with them to Ohio, over half of these parents or guardians (60%) take advantage of child care services outside of the home, while 38 percent reported that someone (e.g., adult, sibling or friend) cared for them at home. A few workers (6%) reported that they took their children with them to work.

Education Level. There were considerable differences between the education level and English fluency of the participants. Although the educational background of the typical Ohio migrant worker ranged from no formal schooling to several years of college, the average number of years completed was 6 years. Approximately 25 percent of the respondents were functionally illiterate (those who completed fewer than five years of school). Only 40 percent of the participants reported they "could speak English well". Of the 34 individuals who immigrated from Mexico, 14 stated that although they had received no formal English instruction, they "picked up" certain English phrases at the worksite or labor camp. Only 26 percent of the interviewees confirmed that they could read and write English. And a small percentage (1%) indicated that they did not speak or read Spanish.

Length and Type of Employment. The average number of years migrants had been coming to Ohio was 3.9 years. Respondents had worked as migrants from less than a week to 70 years. Although the average number of years participants had been working as migrants was approximately 8 years, the most frequent response from participants was less than one year (50%). Working in the field, orchard or nursery is often a monotonous and back-breaking job requiring great physical strength and stamina. Surprisingly, with the exception of the nursery industry, the percentage of migrant men (56%) and women (44%) employed were almost evenly divided. Although it was observed by interviewers that many women performed less strenuous tasks (e.g., sorting or bunching), many women reported that they worked in the field or orchard planting or harvesting with the men. Interviewees (and employers who were personally contacted) indicated that it was common practice for workers to move back and forth between industry groups (e.g., fruit and vegetable), depending upon the season and availability of crops. As shown in Table 1, the three most common tasks performed by respondents were harvesting (51%), hoeing (24%) and planting (11%).

Table 1: Percentage of Workers Performing Specific Migrant-Related Tasks During 1994 (Nw=106 Workers)

Major Task	Number of Participants	Percentage of Participants
Harvesting	54	51%
Hoeing	26	24
Planting	12	11
Pesticide Applicator	8	8
Driver	5	5
Staking	4	4

Occupational Injuries and Illnesses. An objective of this needs assessment was to identify the magnitude and nature of job-related injury and illness of migrant workers. Of the 106 migrant farm workers interviewed, 10 (9%) stated that they had suffered one or more occupational illnesses while working in Ohio during the previous three seasons. Skin irritations (e.g., dermatitis) and eye problems accounted for over 73 percent of the illnesses (Table 2). Similarly, 12 workers (11%) reported one or more occupational injury during the previous 3 years. The three most common types of injuries were: sprains and strains; cuts, contusions and lacerations; and fractures (Table 3). Back injuries accounted for 50 percent of the injuries (Table 4). Agricultural machinery and overexertion (e.g., lifting heavy loads) were the leading sources of occupational injuries (69%). The average time lost due to an injury was 20.5 days, ranging from 150 days to 4 hours. During the interview, "occupational injury" and "occupational illness" were defined as an injury or illness resulting from an accident that occurred while the worker was on the job. Special efforts were made to delineate between worksite accidents and those which occurred at the labor camp, home or in-transit.

Table 2: Number of Occupational Illnesses Reported By Migrant Farm Workers (Nw=12 Workers) During The Previous Three Years

Occupational Illnesses	No. Reported Cases
Eye Problems	4
Skin Irritations	7
Heat-Related Illness	2
Gastrointestinal Distress	1
Carpal Tunnel Syndrome	1

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Table 3: Type of Occupational Injury Reported By Migrant Farm Workers (Nw=10 Workers) During The Previous Three Years

Type of Injury	Number of Reported Cases
Sprains and Strains	15
Cuts, Contusions and Lacerations	5
Fractures	4
Burn, High Temperature	1
Burn, Chemical	1

Table 4: Part of Body Injured As Reported By Migrant Farm Workers (Nw=10 Workers) During The Previous Three Years

Part Of Body Injured	Number of Reported Cases
Back	13
Arm	1
Hand	5
Leg	1
Feet	3
Head	2
Eyes	1

Table 5: Causative Agent of Injury As Reported By Migrant Farm Workers (Nw=10 Workers) During The Previous Three Years

Causative Agent	No. Reported Cases
Machinery-Related	9
Heavy Load (e.g., Overexertion)	9
Fall (e.g., Same/Different Level)	5
Steam Cooker	1
Detergent	1
Knife	1

Unfortunately, many of the respondents were either reluctant to discuss past injury and illness history, or, did not recognize an injury or illness unless it was serious or disabling. Often minor injuries or illnesses (e.g., a strained back muscle or cut hand) were discounted as "too small" to even mention. Over 40% of the workers stated that no injury or illness was enough to stop them

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from working. When asked if they knew their rights and responsibilities under Ohio's Worker's Compensation laws, 65 (61%) interviewees stated that they were did not. Over 97% of the workers stated that they had never filed a Worker's Compensation claim. As an aside, it was noted that 48 of the respondents were initially reluctant to share this information because they feared reprisal from their employers.

Employer Questionnaire

Characteristics of Migrant Employers. The purpose of the mailed questionnaire was to gather information about agribusiness's that employ migrant farm workers. Of the 84 respondents, 46 were classified as vegetable growers, 14 as fruit growers, 5 as nursery producers and 9 as fruit or vegetable packers. Use of migrant labor varied considerably between industry groups. While participants in the Vegetable Group reported the highest average number of migrant employees (Mean=58±9 workers), followed by the Packing House Group (Mean=42±10 workers), the Fruit Group (Mean=12±2 workers) and Nursery Group (Mean=12±3 workers) employed considerably fewer. The Vegetable Group reported hiring the highest percentage of women (35%), while the Nursery Group hired the least (7%). Tasks migrants perform within each group are summarized in Table 6.

Table 6: Percentage of Four Major Employer Groups (Vegetable, Fruit, Packinghouse and Nursery) Utilizing Migrant Labor For Specific Tasks In 1994 (N=84)

Specific Task	% Vegetable (N=46)	% Fruit (N=14)	% Packing (N=9)	% Nursery (N=15)
Planting	85%	7%	100%	80%
Hoeing	93	14	90	73
Harvesting	100	93	100	73
Tractor Operation	44	14	56	48
Pest. Application	0	0	0	20
Clean-Up	28	7	34	20
Forklift	17	7	34	20
Other*	15	27	22	40

* "Other" includes: Sorter, Cooker, Boxer, Truck Driver, Palletizer, and Other Machinery Operation.

Of the 84 respondents, 19 (26%) reported they contract migrant labor through independent crew leaders. An indicator of the degree of direct supervision received by workers, the span of control, is defined by Rinefort (1985) as the number of hourly

workers per manager. Each manager at the fruit operations supervised 40 workers; similarly the span of control at vegetable and packing house operations was 35.5 and 30.5, respectively. Surprisingly, the typical nursery manager supervised only 10 workers.

Characteristics of Migrant Safety and Health Programs In Ohio. In addition to how they utilized migrant labor in 1993, each group differed in the type of safety interventions they implemented to protect their migrant workers from injury or illness. Of the 84 respondents, 64 (76%) completed the section of the questionnaire soliciting safety program information. (Due to monetary constraints, no effort was made to contact those individuals who did not respond). Almost all (96%) reported that their own staff developed and maintained a formal safety and health program. However, less than one-quarter (17%) reported that this safety program included formal employee training. Over 44 percent (37) of the employers stated that written safety rules, regulations and company policies were readily available to all employees. Of these 37 employers, 30 indicated that both English and Spanish versions of this information were available. Less than 18 percent of the respondents read the company safety rules, regulations and policies to their migrant workers. The majority reported that the owner (36%) conducted the safety training (Table 8). This differs from the responses of the migrant workers who stated that crew chiefs (20%) played a larger role in worker training.

Table 7: Percentage of Worker (N_W= 106 Workers) and Employer (N_E=84 Employers) Responses Concerning Who Conducts The Formal Employee Training

Person Conducting Training	No. Worker Responses	% of Workers	No. Employer Responses	% of Employers
Owner	14	13%	30	36%
Supervisor	8	8	25	30
Crew Chief	21	20	17	20
Safety Personnel	0	0	2	2
Outside Source	2	2	2	2
No Formal Training	55	52	50	60
No Response	6	5	20	24

A comparison was also made of the differences in characteristics of safety training reported by the employers and migrant workers. Less than half (40%) of the employers implement a formal safety training program, where one or more individuals may conduct the actual safety training during the season. Employers utilized three types of training: pairing an inexperienced worker with a skilled employee (41%); one-on-one

demonstration (31%); and group meetings (20%). However, those migrant workers who received training reported only one-on-one (73%) and pairing an inexperienced worker with a skilled employee (28%). Half of the migrant workers interviewed stated that they had worked as a migrant in Ohio for less than a year. Approximately 47 percent of the migrant employers who provided formal training reported including special training for new employees. But, descriptions of this special training varied considerably, such as "explain their job function", "show them how to do things", "just take a little more time to make sure they understand". The type of reported training materials used (e.g., slides, demonstration, video or pictures) varied considerably between groups who confirmed formal training (Table 8).

Table 8: Comparison of Worker (N_w= 106 Workers) and Employer (N_E=84 Employers) Response Concerning Type of Training Materials Used In A Formal Safety Training Program

Type of Training Material Used	No. Worker Responses	% of Workers	No. Employer Responses	% of Employers
Demonstration	6	12%	5	6%
Photos	3	5	0	0
Line Drawings	0	0	1	1
Slides	3	56	1	1
Video	9	18	2	2
Written Materials	3	6	4	5
None Used	26	51	1	1
No Safety Training	57	55	50	60
No Response	0	0	20	24

In order to gain a clearer picture of what type of safety information was disseminated, a comparison of specific safety topics cited by <u>both</u> migrant workers and employers was performed (Table 9). The most common safety topics reported by migrant workers was "How To Do The Job Safely-Explaining Safety Rules", "Hazard Communication" and "Manual Lifting". No migrant workers received instruction in how to prevent skin cancer" or to perform Cardiopulmonary Resuscitation (CPR). The most common safety topics cited by employers were: "How To Do The Job Safely-Explaining Safety Rules", "Tractor Safety", and "What To Do In Case Of An Emergency". The least common were: "How To Use and Maintain A Respirator", "Heat-Related Hazards" and "Knife-Training". When asked to cite the primary cause of accidents involving migrant farm workers, the most common response by employers was "worker carelessness". Other responses included:

- "...lack of understanding of accident potential when working near or on moving equipment";
- "...horse-play, not realizing serious nature (of work)";

- "...lack of common sense when working around equipment and machinery
- "...sending (workers) out with a(n) incompetent boss".
- "...working under adverse conditions".
- "... alcohol and drug abuse".
- "...lack of personal responsibility for themselves or others".
- "...greed and trying to get a free ride".

Conversely, a few growers stressed that migrant workers are much more aware of safety hazards and the risks involved in working around moving equipment.

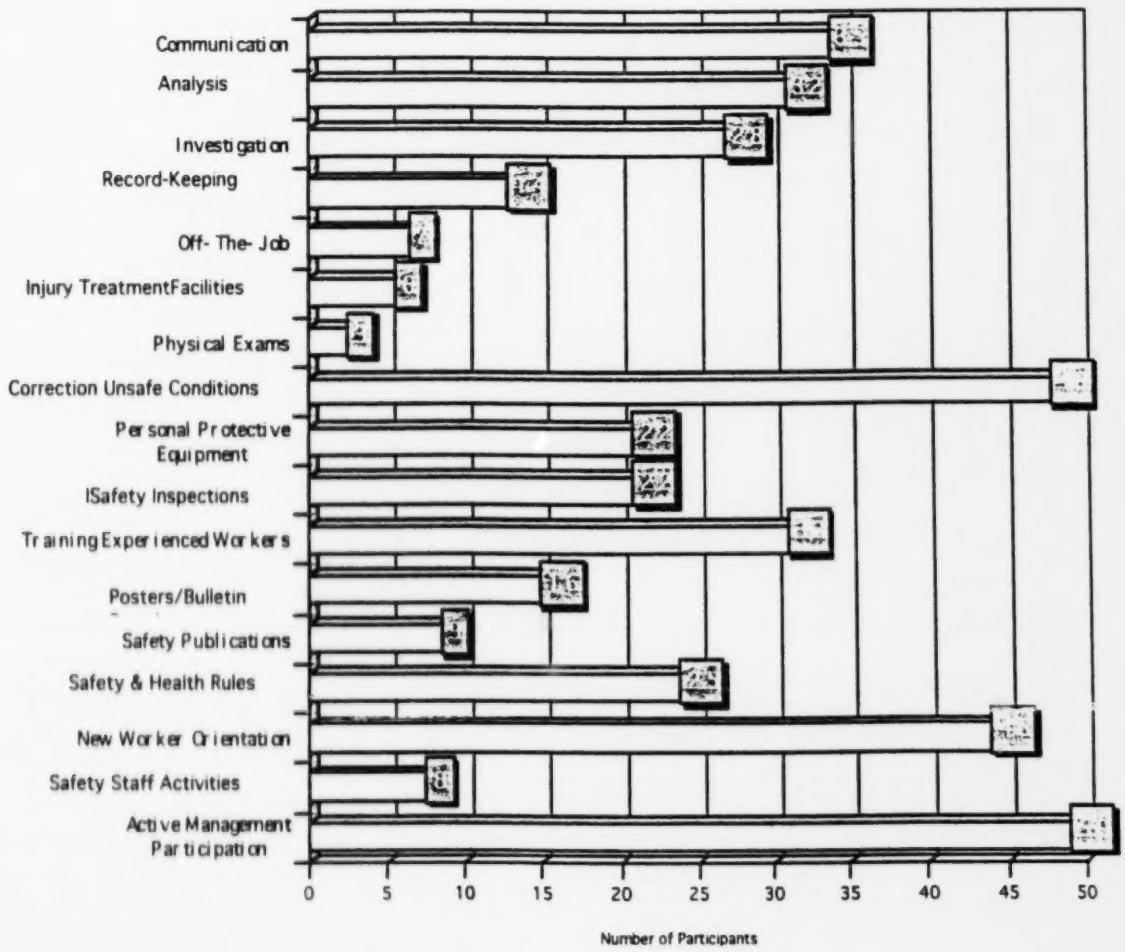
Table 9: Comparison of Worker (N_W= 106 Workers) and Employer (N_E=84 Employers) Responses Concerning Safety Topics Included In Formal Employee Training

Safety Topics	No. Worker Responses	% of Workers	No. Employer Responses	% of Employers
Explaining Safety Rules	41	39%	7	8%
How To Use and Maintain A Respirator	2	2	5	6
Hazard Communication	6	6	3	4
Vehicle Operation Safety	4	4	4	5
Tractor Safety	2	2	7	8
Ladder Safety	1	1	2	2
How To Perform CPR	0	0	1	1
What To Do In Case Of An Emergency	4	4	5	6
Heat-Related Hazards	1	1	1	1
Knife Training	3	3	1	1
Manual Lifting	6	6	3	3
Run-over Hazards	2	2	1	1
Other Machinery Hazards	1	1	3	4
Pesticide Hazards: Application	1	1	3	4
Pesticide Hazards: Early Entry	2	2	4	5
Skin Cancer Prevention	0	0	1	1
Basic First Aid Training	3	3	2	2
Other	0	0	1	1
No Formal Training	57	55%	50	60%
No Response	0	0	20	24%

Attitudes and Perceptions of Migrant Employees Concerning Effectiveness of Certain Preventative Measures. An important objective of The Ohio Migrant Farmworker Safety Needs Assessment was to investigate the perceived effectiveness of certain safety - related activities in protecting the migrant farmworker from

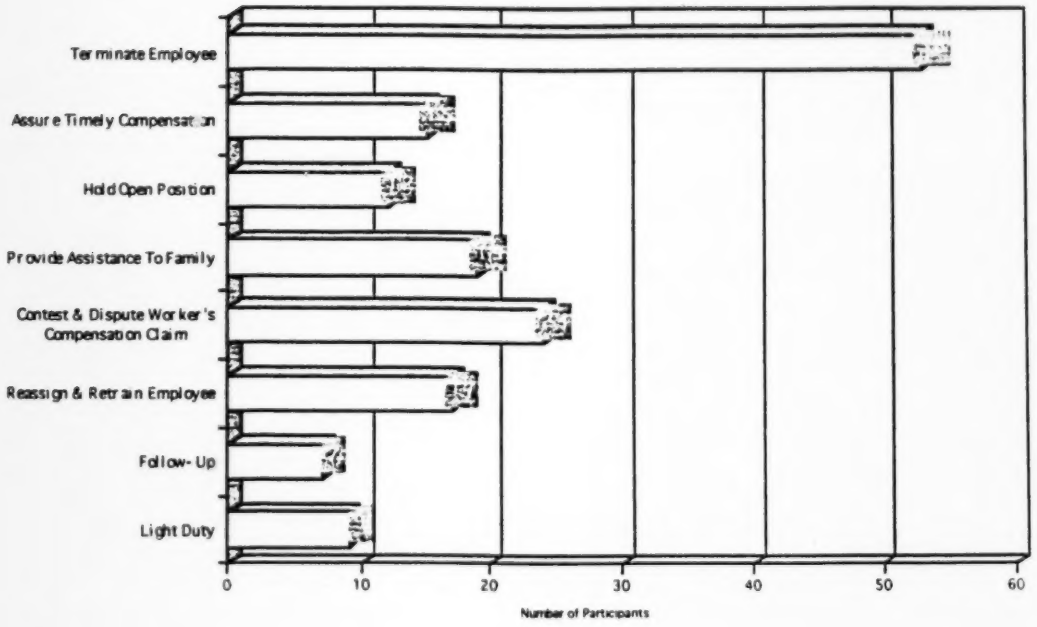
occupational injury or illness. Respondents indicated that "Active Management Participation", "Correction of Unsafe Conditions" and "Orientation/Training of New Employees" were highly effective preventative measure in reducing occupational illness and injury among migrant workers (Figure 2).

Figure 2:
Number of Participants Rating Specific Safety Activities Highly Effective In Preventing An Occupational Injury or Illness.



Attitudes and Perceptions of Migrant Employers Concerning Importance of Specific Activities After An Occupational Injury or Illness Occurs. Another important objective was to research the perceived importance of certain activities after a migrant worker is injured or becomes ill on the job. As a group, migrant employers ranked "Terminate Employee" "Contest and Dispute Worker's Compensation Claims", and "Provide Assistance To The Family"" as having the higher importance after an occupational injury or illness occurs (Figure 3).

Figure 3:
Number of Respondents Rating High Importance of Specific Safety Activities After An Occupational Injury and Illness Occurs



Discussion

Schenker (1995) suggests that a cross-sectional or descriptive study design is the most appropriate for characterizing the magnitude and nature of health problems in the migrant farm worker population. But, there are several unique constraints or methodological issues which may not normally be encountered in descriptive studies of other occupational groups. Population size estimates of migrant farm workers vary considerably, depending on the accepted definition of a migrant farm worker, source of data, time of year and location of workers. Movement of the population between the United States and Mexico,

seasonal and geographical changes in location of employment, legal status and language barriers are additional constraints.

Based upon the descriptive information obtained from the Ohio Migrant Ombudsman and grower associations, it was assumed that this purposive sample of migrant workers and employers provided adequate data to be representative. Selection bias is a major threat in this employment-based study design. By interviewing at employer-provided labor camps or work site a "healthy worker effect" may occur, where individuals who are unable to work or disabled are excluded (Schenker & McCurdy, 1990). This effect was minimized by the inclusion of two migrant clinic interview sites, where injured or ill workers were included. In addition, careful consideration was taken to select eight sites at labor camps and work sites representative of the four major groups. In order to maintain anonymity of the workers and employers, no effort was made to link migrant workers to specific employers. Participation in the interview was voluntary and no monetary compensation or incentive was offered by researchers. This may also have been a source of selection bias.

Since the interview data was collected at one point in time, another possible threat is instrumentation bias. Since many of the interviews were conducted during breaks or after work at the labor camps, worksite or clinic waiting room, the conditions for the interview may vary considerably. Standardized interview script and procedures were utilized to control for this threat. In addition, both male and female trained interviewers were available if the participant requested.

Another possible bias is the attitude of the subjects (e.g., Hawthorne Effect), where participants may alter their responses concerning safety and health because of the special attention they are receiving. In developing the interview instrument and script, special attention was given to avoid leading questions or statements concerning the outcomes of the survey.

The relatively small number of reported occupational illnesses and injuries limits the interpretation of the results. The incidence of occupational illness (14 percent over a 3-year period) and injuries (25 percent over a 3-year period) is well below the national annual rate for agricultural workers (10.6%)(Bureau of Labor Statistics, 1993). Of 287 migrant farm workers studied in North Carolina, 8.4 percent reported an occupational injury during the previous three years. Broken bones, sprains and cuts accounted for 80 percent of the injuries. The use of recall rather than surveillance strategies, the social and economic ramifications of injury in farm work and the exclusion of previously injured workers from the current work force were identified as contributing factors to the underascertainment. (Ciesielski, Hall & Sweeney, 1991). An example of a social ramification found in this study was that several subjects stated they feared retribution by their employer if they reported an injury or illness. Others stated that they

"had to keep working" and often did not seek professional medical attention.

Another possible factor is an inherent belief among the workers that injury and illness is a way of life. In 1992, a series of focus groups was held with 55 Hispanic migrant agricultural workers in central Wisconsin concerning cancer. Participants' fears regarding cancer were coupled with a strong sense of fatalism or *fatalismo* (that is, there is little or nothing a person can do to prevent or survive cancer). A common belief is held that whether or not a person gets cancer or is cured is God's will. Strong religious faith was often coupled with a sense of personal powerlessness. Participants in this study reported that they were reluctant to demand occupational protections to which they are entitled because they were afraid of losing their jobs. The sense that they are easily replaceable with someone who will not challenge an employer on safety issues appears to prevent many migrant agricultural workers from asking for protections to which they are entitled by law (Lantz, Dupuis, Reding, Drauska and Lappe, 1992).

Rust (1990, et al) states that surveillance of occupational injury in migrant and seasonal farm workers poses even greater challenges than that of farmers and permanent farm help. There are difficulties in identifying farm workers and gaining their cooperation in a study after a long workday. Underreporting may also be prominent if symptoms are mild, short-lived or both. Symptoms might be ignored by a temporary farm worker who is fearful of losing his or her job or of being reported to immigration authorities.

In the past, an accepted description of the typical migrant farm worker was that they were predominately male; tend to be older workers, with a median age of 32; and their racial composition is about 46 percent White, 15 percent Hispanic, and 39 percent Black and other races (Slesinger & Pfeffer, 1992). Researchers in this study found that the majority of the migrant workers coming to Ohio are Hispanic males (70%), with a median age of 32 years. Perhaps more importantly, over 50 percent of the workers interviewed were less than 21 years old and had less than one year of migrant work experience. Over 80 percent travel north from the Lower Rio Grand Valley in South Texas or Northern Mexico. Almost 3 out of every 4 workers could not read or write English, while 3 out of 5 workers could not speak English. A quarter of the workers were functionally illiterate (i.e., completed less than five years of school). Similar demographic characteristics were found in a survey of the economic and health needs of migrant workers in Wisconsin in 1989 (Slesinger & Ofstead, 1992 et al). Researchers found that 94 percent of Wisconsin's migrant workers were of Mexican ancestry. About 72 percent are male and ages range from 16 to over 60 years old. Sixteen percent of the men and 19 percent of the women were functionally illiterate.

Conclusions And Recommendations

The results of this safety and health needs assessment indicate that migrant farm workers in Ohio are not receiving adequate, standardized safety and health training. The primary goal of the survey was to describe the typical migrant farm worker and the current level of employee safety training he or she was receiving. The migrant population was not a homogeneous group. Predominately Hispanic, they have a wide range of work experience, English fluency and education level. Unfortunately, this study provided little insight on the magnitude and nature of migrant-related injury and illness. What little safety training that was being provided by employers was developed by their own staff and is often informal, using ineffective or few training methods and materials. Of special significance is that over 50 percent were under 21 years of age and have little commercial agricultural experience. Based upon the information obtained by this study, four recommendations for future development of migrant safety and health programming are discussed.

First, there is a critical need for programmatic and educational support for the growers, managers and crew chiefs who develop and conduct training. The level of safety and health competency of these individuals must be raised before they can effectively train their workers. This underlines the importance of "Train the Trainer" programs and materials, employer incentives to improve quality of training and increased regulations for mandatory employee training. Second, it is imperative that future safety and health programming address the special requirements of the emerging group of inexperienced "new stream" workers. Growers, managers, crew chiefs and safety professionals must familiarize the novice with basic agricultural and occupational safety and health fundamentals. Training must advance past simply pairing the new worker with an experienced employee for a short-time to frequently explaining and demonstrating why and how the safe procedure is the most appropriate. Third, the "one size fits all" approach to migrant safety and health training may no longer be appropriate. Instead, educational programs and materials must be provided in both English and Spanish and be suitable for a wide range of educational and fluency levels. Programming must be sensitive to the fatalistic or *fatalismo* attitude and the migrant's tendency to minimize their injury or illness due to fear of employer retribution or economic constraints. Finally, there is a critical need for more population-based research in order to fully characterize the nature and frequency of occupational injuries and illnesses in this unique labor group. Rather than rely upon recall by the migrant worker, existing injury and illness surveillance systems should be modified to include migrant farm workers as a separate, but equal, group of agricultural workers. This could allow the opportunity for future researchers

to study the magnitude and nature of occupational illness and injury among migrant farm workers over an extended period of time.

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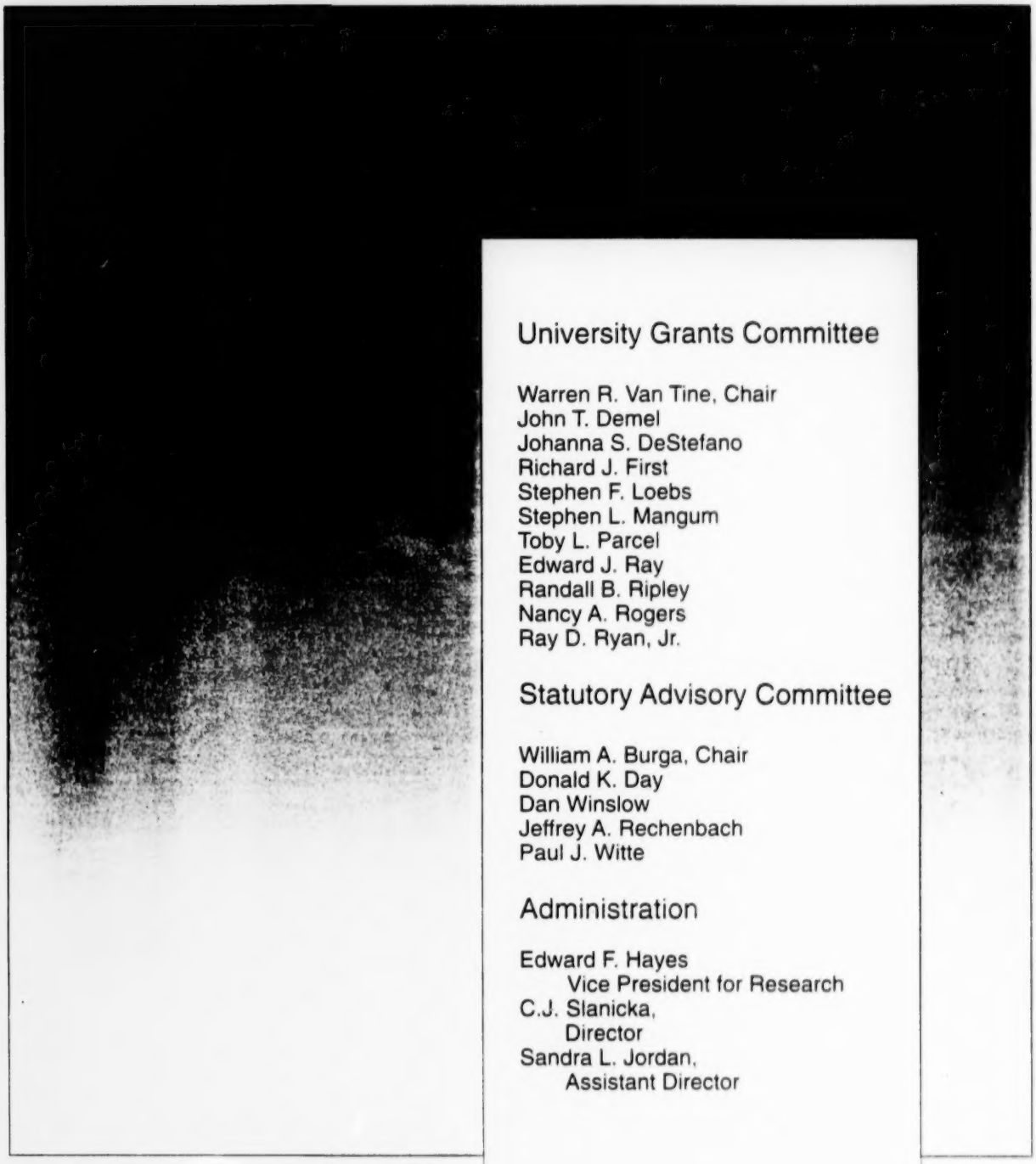

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